

## WHAT IS CLAIMED IS:

## 1. A bonded structure comprising:

a first structure which is a carbon nanotube-based structure including a carbon nanotube and a polymer layer wrapping a rounded surface thereof; and

a second structure bonded with said carbon nanotube-based structure.

## 2. A bonded structure comprising:

a first structure which is a carbon nanotube-based structure including a carbon nanotube and a polymer wound around a rounded surface thereof; and

a second structure bonded with said carbon nanotube-based structure.

3. The bonded structure as set forth in Claim 1, wherein said carbon nanotube-based structure and said second structure are bonded via said polymer.

4. The bonded structure as set forth in Claim 2, wherein said carbon nanotube-based structure and said second structure are bonded via said polymer.

5. The bonded structure as set forth in Claim 3, further comprising:

a bonding material between said polymer and said second structure to be bonded therewith.

6. The bonded structure as set forth in Claim 4, further comprising:

a bonding material between said polymer and said second structure to be bonded therewith.

7. The bonded structure as set forth in Claim 5, wherein said bonding material comprises a set of molecules with a specific interaction.

8. The bonded structure as set forth in Claim 6, wherein said bonding material comprises a set of molecules with a specific interaction.

9. The bonded structure as set forth in Claim 7, wherein said set of molecules with a specific interaction includes a combination of a ligand and a receptor, or a combination of an antigen and an antibody.

10. The bonded structure as set forth in Claim 8, wherein said set of molecules with a specific interaction includes a combination of a ligand and a receptor, or a combination of an antigen and an antibody.

11. The bonded structure as set forth in Claim 1, wherein said polymer includes a polypeptide.

12. The bonded structure as set forth in Claim 2, wherein said polymer includes a polypeptide.

13. The bonded structure as set forth in Claim 1, wherein said second structure is a base member.

14. The bonded structure as set forth in Claim 2, wherein said second structure is a base member.

15. The bonded structure as set forth in Claim 1, wherein said second structure is a metal film.

16. The bonded structure as set forth in Claim 2, wherein said second structure is a metal film.

17. The bonded structure as set forth in Claim 1, wherein said second structure comprises a carbon nanotube.

18. The bonded structure as set forth in Claim 2, wherein said second structure comprises a carbon nanotube.

19. The bonded structure as set forth in Claim 17, wherein said carbon nanotube comprised in said second structure bonded with said carbon nanotube-based structure comprises a polymer layer wrapping a rounded surface thereof.

20. The bonded structure as set forth in Claim 18, wherein said carbon nanotube comprised in said second structure bonded with said carbon nanotube-based structure comprises a polymer layer wrapping a rounded surface thereof.

21. The bonded structure as set forth in Claim 17, wherein said carbon nanotube comprised in said second structure bonded with said carbon nanotube-based structure includes a polymer wound around a rounded surface thereof.

22. The bonded structure as set forth in Claim 18, wherein said carbon nanotube comprised in said second structure bonded with said carbon nanotube-based structure includes a polymer wound around a rounded surface thereof.

23. An interconnection comprising:

a plurality of carbon nanotube-based structures joined to one another respectively including a carbon nanotube and a polymer layer wrapping a rounded surface thereof.

24. An interconnection comprising:

a plurality of carbon nanotube-based structures joined to one another respectively including a carbon nanotube and a polymer wound around a rounded surface thereof.

25. The interconnection as set forth in Claim 23, wherein said polymer includes a polypeptide.

26. The interconnection as set forth in Claim 24, wherein said polymer includes a polypeptide.

27. A single electron transistor comprising:

a carbon nanotube-based structure including a carbon nanotube and a polymer layer wrapping a rounded surface thereof;

a source electrode bonded with said carbon nanotube-based structure via said polymer;

a drain electrode bonded with said carbon nanotube-based structure via said polymer; and

a gate electrode of applying a voltage to said carbon nanotube.

28. A single electron transistor comprising:

a carbon nanotube-based structure including a carbon nanotube and a polymer wound around a rounded surface thereof;

a source electrode bonded with said carbon nanotube-based structure via said polymer;

a drain electrode bonded with said carbon nanotube-based structure via said polymer; and

a gate electrode of applying a voltage to said carbon nanotube.

29. The single electron transistor as set forth in Claim 27, wherein said polymer includes a polypeptide.

30. The single electron transistor as set forth in Claim 28, wherein said polymer includes a polypeptide.

31. A capacitor comprising:

a carbon nanotube-based structure including a carbon nanotube and a polymer layer wrapping a rounded surface thereof; and

a conductive member bonded to said polymer directly or via a bonding material.

32. A capacitor comprising:

a carbon nanotube-based structure including a carbon nanotube and a polymer wound around a rounded surface thereof; and

a conductive member bonded to said polymer directly or via a bonding material.

33. The capacitor as set forth in Claim 31, wherein said polymer includes a polypeptide.

34. The capacitor as set forth in Claim 32, wherein said polymer includes a polypeptide.

35. The capacitor as set forth in Claim 31, wherein said bonding material comprises a set of molecules with a specific interaction.

36. The capacitor as set forth in Claim 32, wherein said bonding material comprises a set of molecules with a specific interaction.

37. The capacitor as set forth in Claim 35, wherein said set of molecules with a specific interaction includes a combination of

a ligand and a receptor, or a combination of an antigen and an antibody.

38. The capacitor as set forth in Claim 36, wherein said set of molecules with a specific interaction includes a combination of a ligand and a receptor, or a combination of an antigen and an antibody.